

### ABSTRACT

A method and system for assessing pore fluid pressure behaviour in a region of interest in a subsurface formation below an earth surface. A stress value representative of formation stress is determined in a measurement region in the subsurface formation. Signals representing the stress are produced using a measurement arrangement. The measurement region is located displaced from the region of interest. The stress value is used to detect presence of non-hydrostatic pore fluid pressure in the region of interest without having to enter the region of interest. To this end, a signal processing device can be arranged to receive the signals and utilize them to detect the presence of the non-hydrostatic pore fluid pressure behaviour.